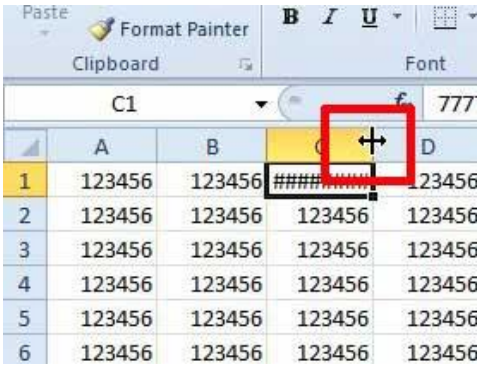
Column Resizing

Column width in Excel is measured in the number of characters that should be displayed. The default width for columns is 8.43…meaning almost 8 and a half characters can be displayed in the default font and font size.

If more than 8 characters of text are entered into a cell and the column is not resized, the text will appear cut off by the next column over. If numbers or dates are too wide to display entirely, you will see hash or pound signs (####) in place of the number or date. Excel still knows what the number or date is, but it "masks" the number or date with these symbols so that the user won't see just a portion of the data and think it's a different number or date than it really is.

Resizing a column in the worksheet to a custom width can be done multiple ways. The most direct method is to place the mouse between 2 column letters at the tops of the columns. The mouse symbol will change to a double-headed arrow as shown below.



Columns are resized from their right side, so in the above graphic, column C will be resized by dragging the mouse to the left to decrease the width of the column or to the right to increase the width of the column. Also, by double-clicking while seeing the double-headed arrow, the column will "autofit," meaning the column width will grow or shrink to the width of the widest typed entry in the column.

Simple Calculations

Excel can perform calculations with worksheet data. Excel calculations are performed by using a formula. Formulas can be typed into the cell where the result should appear. All formulas begin with an equal sign (=). Then type the cell address where the value to be used in the calculation is located. Use standard arithmetic symbols for addition (+), subtraction (-), multiplication (*), and division (/). Consider the data in the following graphic.

	A	B	C	D	E	F
1						
2	ACME Company					
3	*Northeastern Quarterly Sales Report*					
4						
5	**Location**	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total
6	Illinois	$ 1,000	$ 1,000	$ 2,500	$ 3,500	
7	Indiana	$ 1,700	$ 1,900	$ 2,800	$ 5,100	
8	Kentucky	$ 2,100	$ 2,300	$ 2,800	$ 5,400	
9	Ohio	$ 950	$ 2,050	$ 1,850	$ 3,150	
10	Quarter Total					

If the total of the 4 quarterly numbers for Illinois needs to be calculated, the numbers 1000, 1000, 2500, and 3500 need to be added. These numbers are located in cells B6, C6, D6, and E6. So, in cell F6 (where we want the answer to appear), we could enter the formula **=B6+C6+D6+E6**.

But what if you had over one hundred numbers (or more) to add? It wouldn't be practical to type such a long formula with that many cell addresses together to calculate the total. An alternative to stringing individual cell addresses together is to use a function. A function is a built-in keyword that Excel recognizes in order to perform popular computations such as totaling, counting, averages, and so forth. Some basic Excel functions and their descriptions are listed below.

Function	Description
SUM	Calculates the total of values in specific cells.
AVERAGE	Calculates the mean (or average) of values in specific cells.
COUNT	Counts the number of specified cells that contain numbers.
COUNTA	Counts the number of non-blank cells.
MAX	Determines the highest value in the specified cells.
MIN	Determines the lowest value in the specified cells.

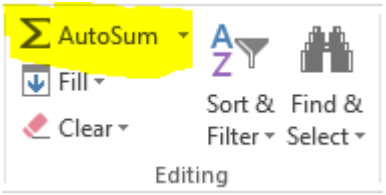
So, using the same example above, if we wanted the Illinois total to appear in cell F6, we could use the formula **=SUM(B6:E6)**. The formula still starts with an equal symbol as all formulas do. However, this time we're using the function SUM. Notice the absence of any plus (+) symbols in the formula? Excel still knows to add numbers because the function SUM says to do so. Functions always have parenthesis after them. Inside of the parenthesis we tell the function which cells contain the values to add (or take the sum of). B6:E6 means to take the values from cell B6 **through** cell E6. The colon (:) symbol means "through." When all of the cells that contain the values are together in a neat, 4-sided area, use the colon as a shortcut symbol instead of listing each cell address individually. Type the cell address of the first cell in the group, then type the colon, and then type the address of the last cell in the group.

Any of the other basic functions in the preceding table can be substituted for SUM. If we substitute the SUM function and still use the same 4 Illinois cells, the formulas and their corresponding results would be as follows.

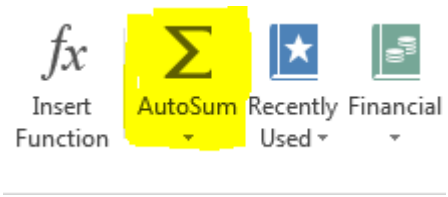
Function	Formula	Result
AVERAGE	=AVERAGE(B6:E6)	$2,000
COUNT	=COUNT(B6:E6)	4
COUNTA	=COUNTA(B6:E6)	4
MAX	=MAX(B6:E6)	$3,500
MIN	=MIN(B6:E6)	$1,000

A quick way to insert some of these formulas into the worksheet is to click on the cell where the answer should appear and then click the AutoSum drop-down arrow on either the Home or Formulas tab on the ribbon.

Home tab (right-side)



Formulas tab (left-side)



Excel will show you a formula inside the cell where the answer will appear. Verify that the cells that it has selected are the cells that should be used in the calculation. The cells it inserts will be highlighted, so if the cells are not correct, click and drag over the correct cells to update the formula. When finished, press Enter to update the formula and see the answer.

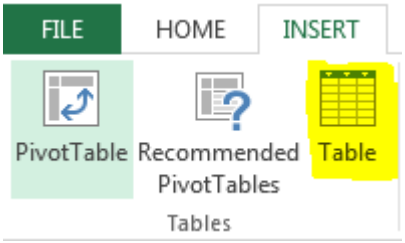
Tables

Managing tables of data is one of the most common tasks that Excel users perform. Excel provides a quick, simple way to format, sort, filter, and calculate data in a worksheet with a large list of information by converting the list of data into a table.

Data that is appropriate to place into an Excel table should meet some requirements.

- The list of data should have column names on the row directly above the first row of data.
- There should not be any blank rows or columns interrupting the list. A few blank cells here and there are OK, but the entire row or column should not be empty.

To convert your list of data into a table, simply click on any cell within the list. Then click on the Insert tab on the ribbon and click the Table button toward the left side as shown below.



A box will appear asking what the range of cells is to place into the table structure. It will also verify that your list has headers…meaning a row of column headings at the top of the list. Click OK.

Several actions will take place.

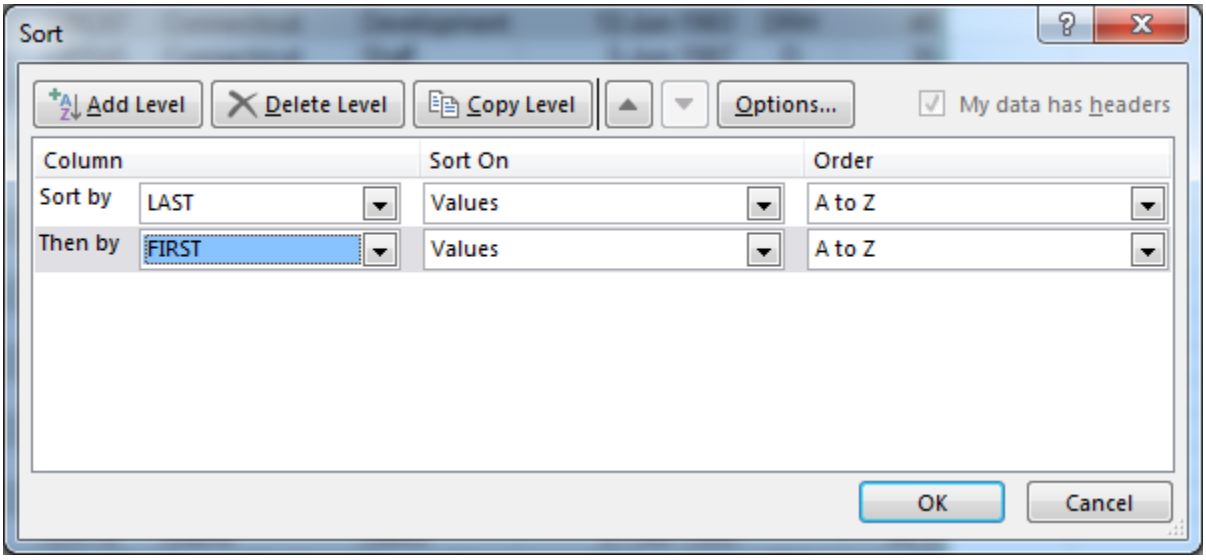
- The table will take on a format using alternating row colors and bolded column headings.
- Drop down arrows will appear next to each column heading, providing sorting and filtering options.
- While clicked within your table, a Design tab will appear on the right side of the ribbon, allowing for several customization options.
- If you scroll down a worksheet with a long table, notice that the column headings move up into the area where you would normally see the column letters. This is similar to the "Freeze Panes" feature. However, if you click outside the boundaries of your table, Excel thinks that we no longer wish to work with the table and therefore removes the Design tab on the ribbon and the column headings in the column letter area.

	A	B	C	D	E	F	G	H	I
1	NUM	FIRST	LAST	EMP#	DIVISION	DEPT	DATE of HIRE	BEI	HRS
2	1	Sara	Kling	GW29	Maine	Sales	24-Dec-1986	R	35.5
3	2	Sean	Willis	GBW09	Connecticut	Sales	5-Jul-1985	D	35.5
4	3	Colleen	Abel	CW58	New Hampshire	Sales	26-Jul-1990	DRH	42
5	4	Teri	Binga	AW55	Vermont	Sales	7-Jun-1988	RH	40
6	5	Frank	Culbert	GBC07	Connecticut	Development	12-Jun-1983	DRH	40
7	6	Kristen	DeVinney	GBS45	Connecticut	Staff	5-Jun-1987	D	35
8	7	Theresa	Califano	CW19	New Hampshire	Sales	26-Feb-1989	RH	35
9	8	Barry	Bally	GC04	Maine	Development	15-Apr-1983	D	40

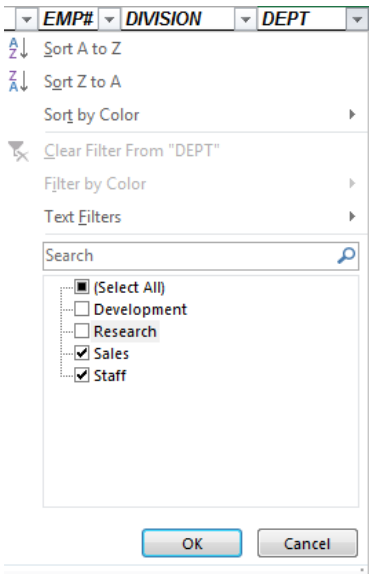
To change the formatting of the table, use the options on the Design tab on the ribbon after clicking inside of the table. Alternating row and/or column shading can be selected by using the Banded Rows and Banded Columns checkboxes. Color changes can be made using the Table Styles gallery.

To sort the table data, use the drop-down arrows next to the column headings. Using the preceding graphic, if the employee list needs to be in alphabetical order by last name, click the drop down arrow to the right of "Last Name," and then select either "Sort A to Z" or "Sort Z to A." All data in the table will be sorted, and data on the same row will stay together when the rows are reordered.

To sort by multiple columns, use the Sort box located on the Data tab on the ribbon. Use the "Sort by" drop down list to select a column to sort by first. Then, click "Add Level" to select a second column to sort by and so forth. The order from top to bottom in the Sort box determines the priority with which the data is sorted. The first column selected has the highest priority and your last column selected has the lowest priority.



To filter for select rows in the table, use the drop-down arrows next to each column heading. Using the same employee list on the preceding page, if the list needs to be filtered for employees who work in the Sales and Staff departments, click the drop down arrow to the right of "Dept" and uncheck Development and Research, leaving only Sales and Staff checked, as shown in the following graphic.



Click OK at the bottom of the list to run the filter. Rows for those employees who do not work in the Sales or Staff departments will be hidden until the filter is removed.

While the list is filtered, row numbers for rows within the table will be blue in color. Also, a small funnel symbol will appear next to the drop down arrow to the right of "Dept," indicating that the "Dept" column was used to create the filter.

Multiple columns can be used to create a more specific filter. While displaying only those employees who work in the Sales or Staff departments, the table can be filtered further by selecting Vermont from the "Division" drop down list. Now only those employees who work in the Vermont division and in the Sales or Staff departments will be displayed.

	A	B	C	D	E	F	G	H	I
1	NUM	FIRST	LAST	EMP#	DIVISION	DEPT	DATE of HIRE	BEI	HRS
5	4	Teri	Binga	AW55	Vermont	Sales	7-Jun-1988	RH	40
23	22	Jacqueline	Banks	AS03	Vermont	Staff	2-Feb-1984	H	40
25	24	Jeri Lynn	MacFall	AW07	Vermont	Sales	8-Apr-1984		40
31	30	Joanne	Parker	AW09	Vermont	Sales	23-Aug-1984	H	40
37	36	Peter	Allen	AW24	Vermont	Sales	31-May-1986		40
51	50	Steve	Singer	AS29	Vermont	Staff	5-Oct-1986	R	40
57	56	Joshua	Maccaluso	AW69	Vermont	Sales	23-Jan-1991	DRH	40
63	62	Michael	Lewis	AW58	Vermont	Sales	27-Apr-1989		15.5
78	77	Esther	Williams	AW39	Vermont	Sales	13-Dec-1986	R	40
80	79	Marianne	Calvin	AS23	Vermont	Staff	23-Jul-1985		40
82	81	Grace	Sloan	AS12	Vermont	Staff	2-Nov-1984	DH	40
84	83	Lorrie	Sullivan	AW04	Vermont	Sales	3-Mar-1981	DH	15.5
91	90	Alice	Owens	AW48	Vermont	Sales	2-Mar-1987	RH	15.5
95	94	Amy	Tooley	AW59	Vermont	Sales	1-Sep-1990		15.5

To turn off the filter(s) in order to see all table rows again, either go to each drop down arrow that was used to create the filter(s) and click "Clear Filter From…" or go to the Data tab on the ribbon and click the "Clear" button in the Sort & Filter group.

The "Total Row" can be added to the bottom of the table to provide quick calculations with the data displayed in the table without the need to write a formula.

To activate the Total Row, click the “Total Row” checkbox located on the Design tab on the ribbon in the “Table Style Options” group.

90	89	Geoff	Brown	GBA48	Connecticut	Research	1-Jul-1987	D	40
91	90	Alice	Owens	AW48	Vermont	Sales	2-Mar-1987	RH	15.5
92	91	Greg	Thomas	AC53	Vermont	Development	24-Dec-1987	DR	40
93	92	Sam	Whitney	GS09	Maine	Staff	28-Nov-1983	R	40
94	93	Erin	Binga	AA70	Vermont	Research	8-Apr-1991	RH	40
95	94	Amy	Tooley	AW59	Vermont	Sales	1-Sep-1990		15.5
96	**Total**								3373

Once the Total Row has been activated, click on any cell on the total row to see a list of calculations that will be performed with the data in the column directly above. For instance, if the average number of hours worked per week is needed as opposed to a total, click on the cell in the Total Row at the bottom of the “Hrs” column and select “Average” from the drop down list. The displayed answer will update immediately.

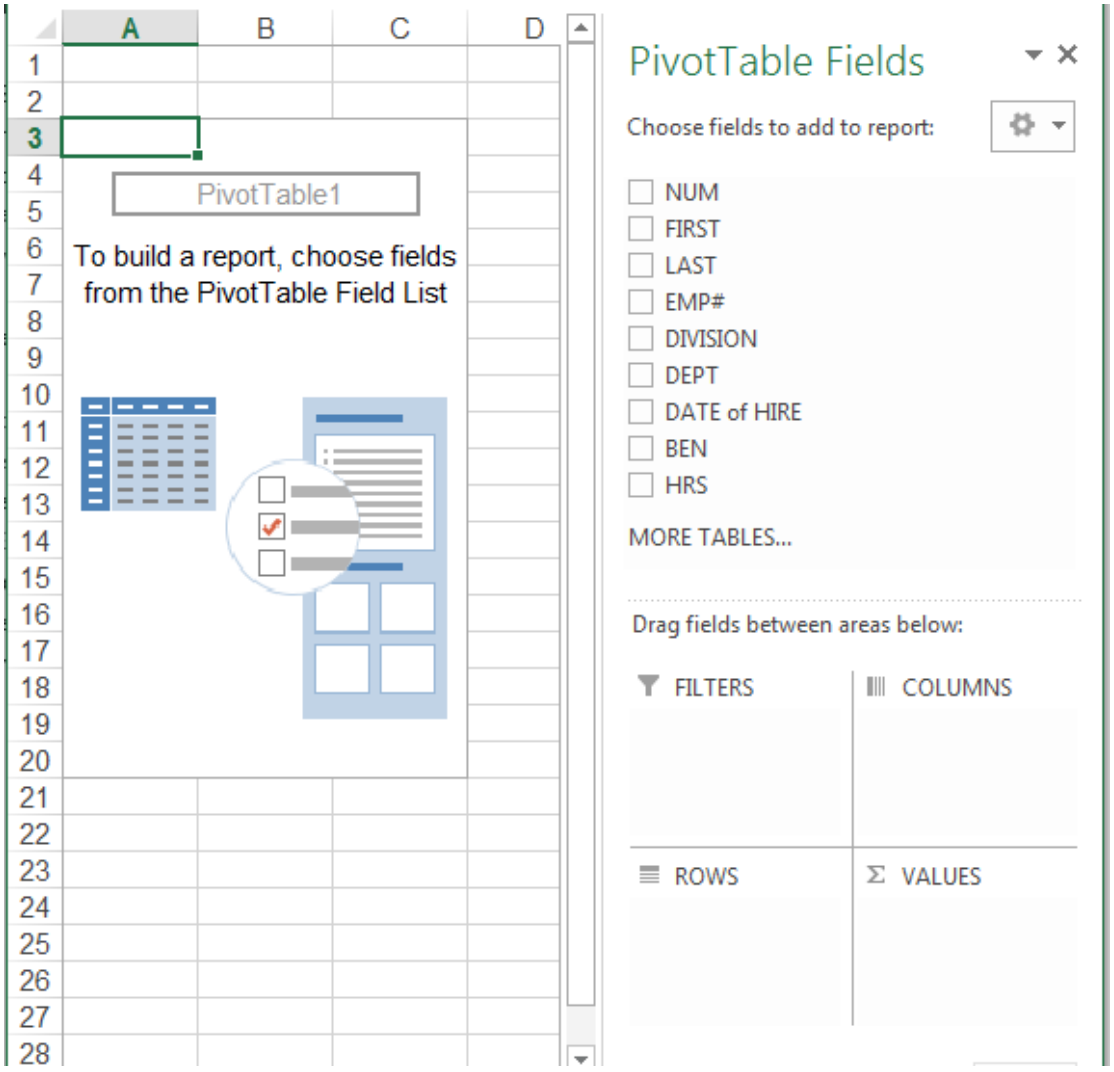
PivotTables

A pivot table allows you to summarize data from a long detailed list or table. If multiple aggregate calculations need to be performed with the data, such as subtotals, counts, or averages, a pivot table will calculate and display the desired results quickly, without the need to construct your own formulas.

Pivot tables allow you to structure your data summary by using unique values from data columns of your choosing from your list of data. Depending on where the pivot table is told to display these unique values, the end result can look similar to a matrix format. Restructuring the pivot table triggers all aggregate calculations to update automatically.

To create a pivot table from a list or table of data, click on a cell within the list and then click the PivotTable button on the Insert tab on the ribbon. A box will appear verifying the location of all of the detailed data that the pivot table should have access to. A location for where the pivot table should be displayed will also be requested (a new or existing worksheet). Click OK to create the pivot table.

Now the PivotTable Fields task pane should be displayed on the right side of the screen along with a graphic on the left side which is where the pivot table summary will eventually be displayed.



At the bottom of the PivotTable Fields task pane, 4 boxes are displayed. You can drag one of the field names in the upper part of the task pane into one of these 4 boxes to begin structuring the pivot table. For example, if we drag the field "Dept" into the Rows box, the pivot table will create a row in the resulting pivot table from each unique value found in the "Dept" column in the original list or table that the pivot table was based upon. There are 4 unique department names found in the 'Dept" column, so the pivot table will create 4 separate rows.

Row Labels
Development
Research
Sales
Staff
Grand Total

Now, if we wanted to know how many employees work in each department, we can drag a field in the task pane into the ∑ Values box ("summarized values"). Every employee should have an employee number, so if we drag the 'Emp#" field into the ∑ Values box, the pivot table will count how many employee numbers are associated with each different department, generating 4 counts.

Row Labels	Count of EMP#
Development	24
Research	24
Sales	30
Staff	16
Grand Total	**94**

The pivot table performs a count automatically because it determined that the data stored in the "Emp#" field was not strictly numeric. Employee numbers in this sample data contain letters also.

If the employee counts should also be broken down by which division the employee works in, we can drag the "Division" field into either the Rows or Columns box in the lower half of the task pane. In the following graphic, I have placed "Division" in the Columns box.

Count of EMP#	Column Labels				
Row Labels	Connecticut	Maine	New Hampshire	Vermont	Grand Total
Development	9	8	3	4	24
Research	10	5	5	4	24
Sales	6	10	4	10	30
Staff	5	4	3	4	16
Grand Total	**30**	**27**	**15**	**22**	**94**

Now the pivot table has created a column for each unique Division located in the "Division" column in the original list or table that the pivot table was based upon. More counts are now displayed at the intersection of a department/division combination. If I was asked how many employees work in Vermont's Sales department, I could quickly answer "10." If you want to know who those 10 employees are, you can double-click the "10" at the intersection of the department and division, and the 10 original rows of data from the list or table will be copied to a new sheet. This "drill down" capability allows you to see how the pivot table arrived at the answer that it calculated for you.